BRITISH HONDURAS

ANNUAL REPORT

OF THE

AGRICULTURAL DEPARTMENT

FOR THE YEAR

1962

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CONTENTS

PART I

Policy	Paragraph 1 - 3
Weather Conditions	4
CROPS	
Citrus	5 - 9
Sugarcane	10 - 17
Coconuts	18 - 21
Bananas	22
Cacao	23 - 24
Rice	25 - 27
Maize	28 - 29
R.K. Beans	30 - 31
LIVESTOCK	
Cattle	32 - 33
Pigs	34
Poultry	35
Beekeeping	36 - 38
Marketing & Agricultural Credit	39 - 41
Emergency Hurricane Relief Rehabilitation Scheme	42 - 43
United Nations Economic Mission	44

PART II

WORK OF THE DEPARTMENT

Staff	45 - 49
Overseas Training Courses & Conferences	50 - 51
Agricultural Education	52
DISTRICT AGRICULTURAL STATIONS	
Orange Walk	53 - 56
Stann Creek	57 - 59
Toledo	60

Cayo 61 - 62

Agricultural Show 63

Belize 64 - 66

Central Farm 67 - 81

Research Section - Central Farm 82 - 118

Sugar Cane Research 119 - 143

Visitors 144

APPENDICES

I. LIVESTOCK TREATMENTS

II. SLAUGHTER HOUSE RETURNS

III. METEROLOGICAL DATA

IV. SUMMARY OF RAINFALL

V. AGRICULTURAL EXPORTS - 1962

PANGOLA GRAZING TRIAL - OFF PASTURE LIVEWEIGHTS 1961

PANGOLA GRAZING TRIAL - OFF PASTURE LIVEWEIGHTS 1962-1963.

ANNUAL REPORT OF THE DEPARTMENT OF AGRICULTURE

FOR THE YEAR 1962

PART I

POLICY

There has been no change in the policy of the Department of Agriculture for this year. This will be revised when the Agricultural Development Plans based on the recommendations of the United Nations Economic Mission are approved and passed by Government.

2. The aims as before were:-

(i) Increased production of food crops such as maize, beans, rice and livestock, aimed at self-sufficiency.

(ii) Increased production of export crops such as sugar and citrus.

3. The policy directed to their attainment remained the same and was as follows:-

(i) The preservation of land and its natural resources by proper land utilization.

(ii) Proving the land potential by scatter plot trials.

(iii) Carrying on research into crops of greatest economic benefit to farmers in the country.

(iv) Dissemination of information thus obtained through the media of Radio Broadcasts, Circulars, Demonstrations by Extension Field Staff, and by Agricultural Educational Courses for farmers at the Agricultural School in Central Farm.

(v) Assisting farmers to develop this land by (a) clearing operations using Caterpillar D7 Tractors (ii) by making available Departmental tractors and implements at very nominal rates for cultivation, cambering, draining, fertilizing, and seeding.

(vi) Supplying good planting material at subsidized prices from Departmental nurseries, such as seedlings of Citrus, Cacao, Coconuts and tropical fruit trees, as well as tested and certified vegetable seeds.

(vii) Making available at all Agricultural Stations pedigree bulls and boars for stud purposes, to improve local stock belonging to farmers; by selling to farmers who require them, pedigree bulls and boars from our foundation herds at Central Farm; helping farmers to treat their livestock for various ailments, and making veterinary drugs available to them for this purpose.

(viii) Making loans available to farmers through the Agricultural Credits Fund to help them develop their farms.

(ix) Making lands available to farmers on the Location Ticket system in which they pay for the land in easy annual instalments, whilst developing it, eventually getting Title to the land.

WEATHER CONDITIONS

4. The rainfall recorded at most stations was below the 10 year average. Extremely dry conditions and high temperatures in the Orange Walk District affected crops of corn, beans and rice, whilst excessive rain and prolonged flooding of rivers in the Belize District affected corn and rice crops. Rainfall records are to be found in Appendix IV.

CROPS

CITRUS

5. A census carried out during the year revealed that 3,969 acres were under Oranges and 1,586 acres under Grapefruit.

6. Apart from some grapefruit harvested just prior to the hurricane of October, 1961 very little of the remainder of the crop of grapefruit and oranges was harvested. The 1961/62 crop was therefore practically nil. Orange trees made a remarkable recovery and blossomed profusely within a few weeks of the disaster. Much of this blossom set, and with subsequent blossomings, prospects for the 1962/63 Season were very much brighter. Grapefruit trees being older and larger, suffered more damage in the hurricane, and the next year's crop will definitely be smaller.

7. A portion of the Agricultural Station at Stann Creek was made available for the Citrus Research Scheme being conducted by the University of the West Indies with C.D. & W. Funds. They have established nurseries at this station using the following rootstocks: sour orange, rough lemon, Cleopatra mandarin, Troyer citrange, Trifoliata and Rangpur lime. These will be budded with selected budwood from the U.S.A. next year. This Research will include fertilizer and cultivation trials, and investigation into insect pests and diseases of citrus prevalent in the country.

8. During the 1961/62 season the undermentioned quantities of fruit were delivered to the factory:-

Grapefruit	106,109 contract boxes	80 lbs. each
Orange	44,387 "	" *90 lbs. each

* Some of this fruit was from groves in the Stann Creek Valley which somehow escaped the full force of the hurricane.

9. The 1961/62 Season Citrus Exports are shown in Table I.

TABLE I

GRAPEFRUIT	NUMBER
Segments A/25	55,487 c/s
Juice Sweetened A/10s	9,013 c/s
Concentrate 4/1 - Bbls.	22 Bbls.
Fresh - Bruce Boxes	43,593 Boxes.

ORANGES	
Juice Sweetened A/2s	48,577 c/s
Juice Sweetened & Unsweetened A/10s	12,990 c/s
Concentrate 6/1 - Bbls	23 Bbls.
Oil - lbs.	7,992 lbs.
Fresh - Bruce Boxes	193 boxes.

SUGAR CANE

10. The grinding season commenced on January 10th and lasted until July 19th. During this period 213,000 tons of cane were harvested, 30,000 tons less than in 1961, and sugar made amounted to 25,817 tons. This was only about 1,750 tons less than for 1961, due to the increased sugar content of the cane harvested.

11. RELEVANT FACTORY DATA IS SHOWN IN TABLE II

TABLE II

Tons cane ground	213,490
Tons sugar made	25,817
Average grinding rate (tons cane/hour)	69.26
Tons cane per ton 96° Sugar	8.16
Tons cane per ton sugar (commercial)	8.27
Average juice Purity, crusher	88.05
Average juice Brix, crusher	20.17
Average juice Pol, crusher	17.76
Tons burnt cane delivered	70,864.00
% Total crop delivered on burnt cane	33.2%
Gallons molasses made	943,404

12. As agreement could not be reached between the B.H. Cane Farmers' Association and the Corozal Sugar Factory, about the price to be paid for the 1963 crop, so the Sugar Board intervened and fixed an interim price of $9.00 per ton, pending arbitration.

13. In October an Arbitration Tribunal was set up composed of C.V. May Esq., Accountant from Jamaica (Chairman), Mr. Victor Weekes Esq., of Barbados and Messrs. Forbes, Usher and McKinstry of Belize. As a result of this arbitration the final price to be paid for the 1962 crop was calculated at $11.12 per ton, and the Growers and Manufacturers agreed that the new formula should also be used to determine the price of sugarcane for the 1963 crop.

14. During the latter part of 1962 a loan of $200,000 to the B.H. Cane Farmers' Association from Barclays Bank, D.C.& O was approved and underwritten by Government. Over half of this amount was issued directly to growers as crop lien loans, the remainder was used to purchase 500 tons of compound fertilizer, Dimon 18-46-0, to be delivered early in 1963, and 50 tons of Agrocide 7, for use in control of Froghopper insect pest.

15. A pest of major importance during the year was Froghopper. This caused widespread damage to corn from late June to early September. Growers began to treat their fields with Agrocide 3, and when supplies of this insecticide ran out, imported "Sevin" to continue dusting their fields. Stunted brown cane made a rapid recovery in October, November, but prolonged dry conditions towards the end of the year slowed down this process of recovery. As a result, it is certain that in certain areas of the Cane District, the 1963 crop will be affected by reduced yields per acre.

16. A bacterial disease of the Fusarium species, later identified as Pokka Boeng, was discovered on cane in the Yo Chen area. As the variety POJ 2878 is very susceptible to this disease, and as most of the Cane District is planted up to this variety, growers were advised to use the resistant and better yielding varieties being propagated at the Cane Station of the Department of Agriculture.

17. Two small mills operated in Toledo District and 9,618 proof gallons of rum were made.

COCONUTS

18. During the year the Coconut Industry Board held no meetings, and Farm Demonstrator Grade I, Mr. T.T. Ramos of the Department of Agriculture again acted as Secretary.

19. An effort was made to get growers to register, so that elections under Section 5 (1) of the Coconut Industry (Control) Ordinances could be held. However there was no response from growers. Besides this it would not have been possible to prepare voters lists for holding the election, as the licensed dealers had lost their records of purchases of coconuts in the hurricane of 1961.

20. Permits were issued to certain vendors in Belize & Stann Creek permitting the importation of whole nuts for domestic consumption. The amounts imported were:-

From Xcalak, Mexico	14,000 nuts
From the Republic of Honduras	261,400 "
TOTAL	275,400 "

The maximum retail price of imported nuts was fixed at .09¢ by the Minister of Natural Resources, Commerce & Industry, in order to control the price of this commodity.

21. Field Staff visited 500 cocals mostly between January & May to complete the survey of hurricane damage, and to advise on control of pests

22. Bananas

Messrs. Green & Atkins' banana plantation at Waha Leaf made a total of 5 shipments during the year, commencing in September. Exports to the U.S.A. amounted to 10,609 (40 lb.) boxes.

CACAO

23. A few growers in the Stann Creek Vally cleaned up their groves with monetary assistance from Government. On the whole most small growers showed no inclination to rehabilitate their groves, and expressed a desire to concentrate on citrus growing. This was a very natural reaction, because they saw their citrus orchards make such a rapid recovery from the effects of the hurricane. No cacao was exported during the year.

24. The Hummingbird Development Corporation carried out rehabilitation of their groves at Caves Branch and Sarstoon. Here the major problem was the replacing of shade. They hope to be shipping Cacao again in 1963.

RICE

25. Acreages planted to rice in the various districts were:-

Toledo	1,725
Stann Creek	31
Belize	661
Cayo	21
Orange Walk	368
TOTAL -	2806 acres

26. The rice crop in the Belize District was once again affected by Hoja Blanca disease and some flooding. In Orange Walk where a larger acreage was sown, dry weather affected growth. As a result, yields in both these districts were very poor. In Toledo conditions were normal, and the bulk of the Marketing Board purchases were once again from this district, amounting to some 1,654,266 lbs.

27. Dima mejorada No. 2, a disease resistant variety was imported from El Salvador but arrived too late for distribution. Some of this seed was made available to Orange Walk and Stann Creek Districts. The Department entered into an agreement with Tennessee Agriculture Ltd. to plant up the balance of the seed in order to increase the supply of good seed for the 1963 season. However, bad weather conditions hampered operations, and did not allow proper land preparation and the making of levees for controlled irrigation. As a result the crop was not satisfactory. However with seed harvested there should be sufficient to try this planting again as an early crop in 1963.

MAIZE

28. Acreages planted to maize in various Districts were:-

Toledo	2,542
Stann Creek	135
Cayo	1,615
Belize	661
Orange Walk	5,631
TOTAL -	10,584 acres

29. All Districts report a poor crop with low yields, due to adverse weather conditions, and excessive damage to standing corn by birds, chiefly parrots.

R.K. BEANS

30. Acreages planted to R.K. Beans in various Districts were:-

Toledo	608
Stann Creek	231
Cayo	150
Belize	280
Orange Walk	318
TOTAL -	1587 acres

31. The large increase in acreage under this crop is due to the issue by Government of R.K. Beans seed, free of cost, to farmers as a Hurricane Relief measure. As reported last year 1,000 sacks or 100,000 lbs. of seed was distributed.

LIVESTOCK

CATTLE

32. A census of cattle in the country reveals a general increase in all districts over the figures supplied for the 1961 census.

Cayo	14,129
Belize	5,160
Orange Walk	3,461
Corozal	192
Stann Creek	1,115
Toledo	1,041
TOTAL -	23,098

33. There were no further developments regarding the erection of an abbatoir.

PIGS

34. The raising of good pigs is dependent very largely on proper feeding. In this country there is a pressing need for a cheap source of animal protein which can be used for balanced feeding. The few farmers who are successful with hogs have to import these proteins. However the average small farmer cannot afford this, and so his pigs are below standard.

POULTRY

35. As with pigs, imported feeding stuffs supplying the necessary proteins are expensive, and so farmers are unable to produce chickens which can compete with those imported, and which retail at 55/60¢ lb. dressed. A total of 65,200 day old chickens were imported from the U.S.A. during the year.

BEEKEEPING

36. The beekeeping industry continues to make steady progress. Production of honey for the year amounted to some 115,208 lbs. This was less than 1961, because many of the plants supplying the nectar and pollen were damaged by the high winds accompanying hurricane "Hattie", and so blossoming of plants was affected.

37. TABLE III

District	Apiaries	Hives	Beekeepers	1962 Production	1961 Production
Corozal	54	1257	33	59,403	75,664
Orange Walk	45	1175	15	55,265	66,056
Belize	2	15	2	No record	16,848
Cayo	2	7	2	- " -	-
Stann Creek	2	14	2	540	-
TOTAL -	105	2468	44	115,208	158,568

38. Mr. Antonio Espat erected a small plant in Belize for handling purchases of honey. During the year he exported 90,720 lbs. (140 drums). The balance of 24,488 lbs. was sold locally at $100.00 B.H. a drum.

MARKETING AND AGRICULTURAL CREDIT

39. The Marketing Board purchased Maize, Paddy and Red Kidney Beans at guaranteed prices from farmers.

During the year these purchases were:

Maize	64,614 lbs.
Paddy	1,585,541 lbs.
R.K. Beans	747,088 lbs.

40. 16 new loans were approved and issued by the Agricultural Credits Fund Committee in 1962. These loans plus instalments on old loans amounted to $50,188 made up as follows:-

	$
Livestock and pasture	18,844.00
Beekeeping	4,700.00
Coconuts	810.00
Mixed Farming	3,316.00
Transport (Trucks)	11,185.00
Pesticides	9,583.00
Citrus	250.00
Equipment (Farm)	700.00
Miscellaneous (House)	800.00
	$50,188.00

41. Financial position of the Fund at 31.12.62.

Capital		$400,000.00
Loans issued to 31.12.62	$610,851.14	
Loans committed to 31.12.62	59,176.97	
	670,028.11	
Less: Repayments	319,216.80	
	350,811.31	350,811.31
Balance Available		$49,188.69

EMERGENCY HURRICANE RELIEF REHABILITATION SCHEME

42. This work was primarily in the worst devastated areas in Stann Creek District. In the North and South Carib Reserve areas, Mullins River, Silk Grass and Sittee areas 402 men and 669 women were assisted. These all worked on their holdings and the following work was accomplished:-

Plantains	325 acres planted
Cassava	260.5 " "
Cocoes	21.5 " "
Yams, Yampies	5.5 " "
Sweet Potatoes	20.00 " "
Maize	121.25 " "
Rice	31.25 " "
R.K. Beans	231.50 " "

The purpose of this emergency relief was to get people back on the farms, and for them to grow crops, that they could use in the home. Surplus of any crop found its way to the market.

43. In other Districts, Emergency Relief took the form of a free issue of R.K. Bean seeds, (100,000 lbs.), Vegetable seeds (101 lbs.) and Barbed wire. This was stated in last year's Annual Report, but I mention it again, because the help thus given, did in fact do what it was intended to, namely,

(a) get farmers back on the land
(b) assist them with produce they could use themselves.

This reflected in the increased acreage under beans and vegetables.

UNITED NATIONS ECONOMIC MISSION

44. A special United Nations Economic Mission visited this country during the year to advise Government on Development. Professor René Dumont, Agricultural Development Economist from F.A.O., Rome, visited British Honduras to advise the U.N. Economic Mission on the agricultural development aspect. His report has been submitted to Government, During his short stay the Acting Chief Agricultural Officer took him to all Districts, where he had an opportunity of seeing present agricultural development, and had discussions with farmers and livestock breeders.

PART II

WORK OF THE DEPARTMENT

STAFF

45. The Staff position during the early part of the year was not very different from that of 1961, but during the latter half, two officers resigned, and one, having completed his tour, left the country. Attempts to recruit a substantive Head of Departmentwere again unsuccessful.

46. Mr. S.D. Wilkie M.R.C.V.S., Veterinary Officer resigned his post and left the country in June, 1962.

Mr. F.F. Orio Sr., retired Asst. Agricultural Officer, was re-employed on a temporary basis as Acting Veterinary Officer from 1st July, 1962.

47. Mr. R. Hill M.A. (Cantab) Agricultural Education Officer completed his tour of duty and left the country on 24th September, 1962.

48. Mr. E.D.S. Kemp, Farm Manager, resigned his post towards the end of the year to devote his time to his own farm at Buena Vista, Cayo District.

49. It is with deep regret that I have to record the death in November, of Farm Demonstrator Grade I, Mr. H. Nelson, whilst driving his car to Central Farm via the Hummingbird Highway.

OVERSEAS TRAINING COURSES & CONFERENCES

50. Farm Demonstrator Grade II Mr. P.B. Lizarraga, was granted a scholarship and proceeded to the Eastern Caribbean Farm Institute in Trinidad in September to take the two year Diploma Course.

51. Farm Demonstrator Grade II Mr. J. Link was granted a scholarship by A.I.D. and proceeded to Tucson University, Arizona in September, to commence a 4 year training leading to the B.Sc. Degree in Agriculture.

AGRICULTURAL EDUCATION

52. The course in agriculture for 16 students interrupted by the hurricane of October 1961 was resumed on 16th January. This lasted for three months.

In July two Refresher Courses, of two weeks duration each, were held for Farm Demonstrators.

DISTRICT AGRICULTURAL STATIONS

ORANGE WALK

53. Crops of corn, beans and rice were all affected by dry weather conditions and yields as a result were poor.

54. In vegetable trials with seed supplied by Mr. Ray Russel of A.I.D. Guatemala, the variety Roma for tomatoes proved a prolific yielder. Smith Perfect for Melons, and Clemson Spineless for Okra also proved to be vigorous and good yielders.

55. The Mennonite Community in Blue Creek did well with supplying fresh eggs for the market. Agricultural Officer for Orange Walk mentions up to 20,000 eggs a week, with prices ranging from 3¢ to 8¢ each.

56. The clearing, windrowing and ploughing of land for the development of the new Agricultural Station at Yo Creek was undertaken during the year.

STANN CREEK

57. The major work during the year was the rehabilitation of farms destroyed by the hurricane. In this work farmers were paid a small daily subsistence, and were assisted with planting materials, namely plantain and banana bits, cassava sticks, bean and rice seeds. All these commodities form part of the staple diet, and the crops harvested were a great help to the population of this devastated area. Citrus & Cocoa growers with under 50 acres were assisted with an allowance for cleaning their orchards, based on the acreage planted. To ascertain what acreage was involved, a very accurate and thorough census of all groves was carried out.

58. The rehabilitation of the Agricultural Station was also completed during the year. This entailed a lot of work, as most of the quarters were either destroyed or badly damaged, as were nursery propagating sheds, dairy and other livestock buildings.

59. COCOA STATION

The clonal nurseries and one propagator were rehabilitated. However there was no demand for planting material, as many cocoa growers decided to replant with citrus, so propagation was reduced to a minimum.

TOLEDO

60. The corn crop suffered from animal and bird damage and this affected yields. The rice and bean crops were good.

CAYO

61. The corn crop suffered from animal and bird damage. As in Toledo this damage affected yields considerably.

62. Cattle owners were helped with barbed wire and grass seeds to rehabilitate their pastures damaged by floods after the hurricane.

AGRICULTURAL SHOW

63. A very successful District Agricultural Show organized by the Agricultural Officer was held in Cayo in October. The emphasis was on livestock, chiefly cattle. The highlights of the show were the exhibits of pedigree Brahmins and Santa Gertrudis bulls, by livestock breeders from Cayo and other Districts. The standard of farm produce exhibited by the various villages in the District was good.

BELIZE

64. Hoja Blanca disease affected the rice crop in this District. Farmers who had sown "Century Patna" or "Blue Bonnet" varieties, lost most of the crop. Those who had "Gulf Rose", which was originally claimed to be resistant, but has since proved to be slightly susceptible to the disease, were able to harvest some of the crop. Spraying carried out by Tennessee Agriculture Ltd. on their fields at Mussel Creek, using Toxophane and Malathion, gave some control of leafhoppers, Sogata sp.

65. Tropical fruits, mangoes especially, were in short supply in the Belize Market. This is attributable to damage caused to the trees by the hurricane. Next year these trees should be bearing normally.

66. There was a marked increase in the number of farmers, chiefly in the Sibun River area, who engaged in vegetable growing. Supplies of fresh vegetables were plentiful, and at times there was even a glut, especially with cabbages.

CENTRAL FARM

67. The herds at Central Farm continued to show improvement during the year. The calf crop for 1962 amounted to 113 head, 62 bull and 51 heifer calves.

68. Foundation Herd No. 1. JAMAICA RED

TABLE IV

	BULLS	COWS	1960 M.	1960 F.	1961 M.	1961 F.	1962 M.	1962 F.	TOTAL
Stock at 31.12.61	4	38	5	17	11	12	-	-	87
Births							22	9	
Deaths		-3					-2	-1	
Sales	-1		-1						
Transfers	-2								
Stock at 31.12.62	5	35	4	17	11	12	20	8	112

69. BRAHMIN HERD

TABLE V

	BULLS	COWS	1960 M.	1960 F.	1961 M.	1961 F.	1962 M.	1962 F.	TOTAL
Stock at 31.12.61	4	20	1	2	7	9			43
Births							7	8	
Deaths	-1						-3	-1	
Sales									
Transfers	1								
Stock at 31.12.62	4	20	1	2	7	9	4	7	54

70. LOCAL HERD

TABLE VI

	BULLS	COWS	1960 M.	1960 F.	1961 M.	1961 F.	1962 M.	1962 F.	TOTAL
Stock at 31.12.61	1	77	24	15	17	25			159
Births							33	34	
Deaths		-2					-3	-5	
Sales		-3	-24	-1	-1				
Transfers									
Stock at 31.12.62	1	72	-	14	16	25	30	29	187

71. DAIRY PRODUCE - MILK

Milk sold	19,517 lbs.
Milk made into cream	844 lbs.
Milk issued to calves	16,274 lbs.
Milk issued to pigs	5,424 lbs.
TOTAL -	42,059 lbs.

72. PIGS

During the year 10 boars Large Black were sold to farmers for breeding purposes, and 1 boar supplied to Rancho Dolores to help improve the standard of pigs in that village.

73. SHEEP

3 rams and 5 ewes were sold to farmers for breeding purposes.

74. In the following tables records are given of vegetable seeds and plants sold from Agricultural Station Nurseries, Livestock sold to farmers for breeding purposes, Livestock sold for butchering; and work completed by Departmental mechanical units for farmers in different districts.

TABLE VII

75. VEGETABLE SEEDS AND PLANTS SOLD FROM AGRICULTURAL STATIONS.

STATION	VEG. SEED PKTS.	CITRUS SEEDLINGS	CACAO SEEDLINGS	TROPICAL FRUIT TRS.	GRAFTED MANGOES	COCONUTS TALLS	COCONUTS DWARFS	ORNAMENTALS
Toledo	876	148	580	-	5	796	63	-
Stann Creek	401	6,302	-	-	107	-	-	157
Orange Walk	2,987	45	-	425		1,777	-	1
Cayo	-	263	-	-	-	153	-	-
Central Farm	-	-	-	3	-	-	260	2,815
Belize	1,425	-	-	-	-	-	-	-
TOTAL	5,689	6,758	580	428	112	2,726	323	2,973

TABLE VIII

76. LIVESTOCK SOLD TO FARMERS FOR BREEDING PURPOSE

STATION	BRAHMAN		JAMAICA RED		BRAHMAN x LOCAL		RED POLL x LOCAL		LARGE BLK. PIGS		SHEEP	
	M.	F.	M.	F.	M.	F.	M.	F.	Boars	Gilts	Rams	Ewes
Toledo	-	-	-	-	-	1	-	4	-	-	-	-
Stann Creek	-	-	-	-	-	-	4	14	-	-	-	-
Central Farm	-	-	1	-	1	-	-	-	10	9	3	5
Orange Walk	-	-	-	-	-	-	-	2	-	-	-	-

SOLD FOR SLAUGHTER - CATTLE

	M	F
Central Farm	23	4
Stann Creek	-	16

TABLE IX

77. WORK DONE FOR FARMERS BY DEPARTMENTAL MECHANICAL UNITS.

	TOLEDO	CAYO	STANN CREEK	BELIZE	ORANGE WALK	TOTAL
Ploughing	77.16	88.5	199.5	47.39	30.0	442.99
Harrowing	97.50	52.5	230.0	47.39	-	427.39
CAMBERING	-	3.0	23.0	-	-	.26
Bush-Hogging	-	80.0	604.75	135.5	81.5	901.75
Levelling	-	-	3.0	16.25	-	19.25
Ridging	-	-	7.0	-	-	7 acres
Terracing	-	-	19.0	-	-	19 "
Hauling (hours)	76	-	-	-	114	190 hrs.
Fertilizing (hours)	-	-	104	-	-	104 "

78. LAND CLEARING UNIT

For about 5 months the 4 Caterpillar D 7's tractors belonging to this unit were attached to the Forestry Department, and used by that Department for its post-hurricane Fire Precaution programme.

79. When the rains broke, the unit was withdrawn, and some time was spent overhauling the machines. The machines were then employed solely in the Stann Creek District on land clearing.

	Operation D4	Operation D7's
Bushing	105 hours	1,245 hours
Windrowing	-	249 "
Raking	95 "	- "
Levelling	19 "	3 "
Roads	- "	26 "
Bush Cutting	53 "	- "
Harrowing	17 "	- "
Miscellaneous	- "	13 "

80 VETERINARY SECTION

The headquarters of the Veterinary Section was moved back to Paslow Building in Belize, with the appointment of Mr. O. Orio Sr., as acting Veterinary Officer.

81. A list of treatments for various livestock ailments carried out by the acting Veterinary Officer and Farm Demonstrators is given in Appendix I.

RESEARCH SECTION - CENTRAL FARM

82. POLICY

The policy of the division remained much the same as for 1961, conducting a limited programme of research into the major economic crops. It was also decided to farm the two national crops corn and beans on a commercial basis at Central Farm. This in general has been most successful and has drawn favourable comments from the farming community. During the year an increasing amount of advisory work was dealt with by the staff of the division on citrus, coconuts, pasture and vegetables.

83. STAFF

Farm Demonstrator P.B. Lizarraga left in September on a two year course at E.C.F.I. Trinidad joining H.A. Reyes, who should return to the Department in June, 1963. L.A. Marin took over from Lizarraga as farm demonstrator in charge of the research division.

Asst. Analyst N.E. Wade has been awarded a scholarship by A.I.D. to study for a degree in Agriculture in the U.S.A.

Asst. Analyst N.H. Hall has been assisting the Civil Engineer in his work in connection with the New Capital site at Roaring Creek.

84. LABORATORY:

For the first part of the year the routine cane leaf analysis was continued for the Cane Officer. Analysis of citrus leaf and pasture samples have been carried out along with routine soil analyses and pH determinations.

THE PINE RIDGE SOILS - BOOM AREA:

85. The pine ridge soils have been dealt with in the Colonial Office publication No. 24 and much valuable information is available there. However over the past two years more basic work has been carried out on the fertility problems relating to improved pasture establishment.

86. Of the six pasture species planted at Hector Creek in 1961, the Jaragua, Guinea, Pensacola bahia and Pangola still maintain a good coverage with little invasion by native species. However constant applications of nitrogen have to be made to maintain this growth. It is evident however that these grasses are losing vigour and the seeding of the jaragua and guinea grasses was not as profuse as in 1961. During 1962, 600 lbs. per acre of sulphate of ammonia was applied in three separate applications and the response has not been encouraging.

87. In the Boom area where the topsoil is more sandy, approximately one acre each of pangola and jaragua were established by first turning under the native species with a harrow, applying 200 lbs. per acre of triple superphosphate, 2 tons of lime per acre and then seeding. In both cases initial establishment was good. 200 lbs. per acre of sulphate of ammonia was applied after establishment and although initial response to the nitrogen was good, regrowth after the first and second clippings, with further applications was poor. The pangola grass especially gives the appearance of drying up from the leaf tips backwards.

88. Further investigations into the Boom area pine ridge soil shows the following profile description:-

A_o 0 -½" Very indistinct boundary, small organic matter content, loamy sand.

A_2 ½ -3" Structureless loamy sand; grey 10YR 6/1 loose consistency, non sticky, non plastic.

B_1 3 -14" Structureless loamy sand, loose consistency, non sticky, non plastic, slightly moist, roots numerous, 10YR 6/8.

B_2 14-17" Sub-angular blocky, slightly moist sandy loam, transition zone, roots numerous, 5YR 7/2; mottles numerous and large 5 YR 6/6; slightly loose consistency, non sticky, non plastic.

B_2 17-48" Moist sandy clay, few roots, soft consistency, Plastic, non sticky; 5YR 7/2 with large blotches 10 R 4/6.

89. The cation exchange capacity is fairly low and the available phosphate is zero. The analysis as performed at the Regional research centre Trinidad is as follows: (Table A).

TABLE A

R.R.C. SOILS
ROUTINE SOIL CHEMICAL ANALYSES
(Non-CALCAREOUS NON-SALINE)
$CaCO_3$ less than 1% Sol. Salts less than 2 me%

IDN. NO. LAB NO. 1961	DEPTH IN INS.	M.F. (1050)	% L.o.	pH Water $CaCl_2$ Moist	pH Water $CaCl_2$ Air Dry	pH Water $CaCl_2$ Air Dry	EXCHANGE DATE (me% o.d.s.) C.E.C.	T.E.B.	Ca	Mg	K	Na	H	% B.S. 100 T.E.B. C.E.C.	% o.d.s. C	% o.d.s. N	C/N	Truog P_2O_5 ppm in o.d.s.
746	0 - ½	1.00	1.2		5.2		1.2	1.1	0.2	0.5	0.04	0.24	0.1	92	0.8	0.08	10.8	0
747	½ - 3	1.00	0.5		5.3		1.0	0.9	0.2	0.8	0.00	0.01	0.1	90	0.7	0.05	13.9	0
748	3 - 14	1.01	1.8		5.1		2.7	1.7	0.5	0.3	0.00	0.01	1.0	63	0.4	0.04	9.7	0
749	14 - 17	1.02	3.1		5.1		3.5	2.0	0.2	0.0	0.05	0.05	1.5	57				0
750	17 - 36	1.06	6.3		5.2		9.9	6.4	3.0	2.7	0.08	0.42	3.5	65				0
751	36 - 48	1.05	4.7		5.3		10.1	7.6	4.1	4.0	0.03	0.30	2.5	75				0

90. From the analyses shown at Table A it is clear that any improvement will depend on fertiliser amendments using lime and nitrogen, phosphate and potash with some trace elements.

91. The table below shows some analytical figures obtained from artesian well water, Surface crust around the well and ordinary pine ridge topsoil. These figures have been included in this report with the kind consent of Mr. Acree on whose property most of the work has been carried out.

TABLE B

	ARTESIAN WELL WATER pH 6.9	SURFACE CRUST ABOVE ARTESIAN. WELL pH 6.6	TOPSOIL UPPER ½" pH 5.1	LEAVES OF NATIVE GRASS
N	1.8 ppm	13.0 ppm	13.0 ppm	0.78 %
P	3.6 "	10 "		0.10 %
K	7.6 "	53 "		0.61%
Ca	680.0 "	2.0 %	700 ppm	0.60 %
Mg	140.0 "	1.07 %	600 ppm	0.30 %
Cl	320.0 "	0.14 %		
Bo	0.002 "	0.4 ppm	30 ppm	4 ppm
Mn	0.03 "	100 ppm	10 ppm	133 ppm
Cu	0.06 "	10 ppm	12 ppm	3.6 ppm
Fn	0.15 "	8 ppm	50 ppm	24 ppm
Fe	2.80 "	15 ppm	700 ppm	
Al	15.0 "		1.06%	
Ti	Trace		720 ppm	
Si	9.4 "		44%	
Ba	0.112 "		50 ppm	
Co	0.003 "		1.0 "	
Cr	0.01 "		5.0 "	Trace
Mo	0.003 "		1.0 "	
Ni	0.03 "		10.0 "	Trace
Pb	0.003 "		1.0 "	
Sn	0.003 "		1.0 "	
Va	.003 "			
Fn	0.002 "			
Sr.	8.4 "			
S	520.0 "	1.2 %		

92. The surface crust near the water hole was high in calcium, magnesium, chlorine and sulphate. However the conductivity of the soil extract from the crust was low. One of the problems of the soil is the low PH and high aluminium content.

93. The following pot study was set up in collaboration with Dr. Blue of the University of Florida. Plastic pots were used with drainage holes punched in their bottoms with six and seventeen pounds of subsoil and topsoil being added respectively. The lime dressing was incorporated into the topsoil before-hand, the soil soaked and left for a few days. The other nutrients were then scratched into the topsoil and the pots were sprigged with pangola grass.

94. The treatments applied and results obtained are shown in the following table:- (Table C).

TABLE C

HERBAGE PRODUCED IN GRAMS

TREATMENT	LIME TONS/ACRE	N LBS/ACRE	P205 LBS/ACRE	K20 LBS/ACRE	MGO LBS/ACRE	FRIT LBS/ACRE	1st CUTTING OCTOBER FRESH WT.	DRY WT.	% D.M.	2nd CUTTING DECEMBER FRESH WT.	DRY WT.	% DRY MATTER
1	0	0	0	0	0	0	1.80	0.43	23.89	16.10	3.76	23.35
2	0	100	100	100	0	0	81.70	18.34	22.45	100.50	25.55	25.42
3	1	100	100	100	0	0	112.00	22.74	20.30	96.50	28.14	29.16
4	2	100	100	100	0	0	46.50	10.60	22.80	40.80	12.53	30.71
5	3	100	100	100	0	0	30.30	7.65	25.25	19.30	5.12	26.53
6	2	100	1 0	100	0	0	6.80	1.19	19.83	34.10	7.75	22.73
7	2	100	200	100	0	0	104.50	22.69	21.71	74.40	20.38	27.39
8	2	100	400	100	0	0	160.50	32.91	20.50	174.60	48.57	27.82
9	2	100	1000	100	0	0	105.50	23.26	22.05	74.00	21.50	29.05
10	2	100	100	0	0	0	21.90	5.62	25.66	0	—	—
11	2	0	100	100	0	0	82.00	10.21	12.45	68.40	17.39	25.42
12	2	0	100	0	0	0	45.20	10.52	23.27	60.40	16.71	27.67
13	2	0	0	100	0	0	5.10	1.08	21.18	35.20	9.54	27.10
14	2	100	0	0	0	0	7.50	1.49	19.87	30.20	8.41	27.85
15	2 (Dolomitic)	100	100	100	0	0	96.50	21.55	22.33	74.30	23.63	31.80
16	2	100	100	100	100	0	93.50	22.63	24.20	76.70	19.64	25.61
17	2	50	50	100	100	0	46.26	28.11	60.83	45.60	11.46	25.13
18	2	100	100	100	100	30	82.50	20.89	25.32	49.40	13.46	27.27
19	0	50	50	50	0	0	45.90	11.21	24.42	75.50	20.77	27.51
20	2 (Dolomitic)	100	100	100	0	30	86.00	20.57	23.92	22.50	6.98	31.02
21	2	100	100	100	0	30	78.00	19.34	24.79	62.40	15.91	25.50
22	2	0	0	0	0	0	2.5	0.62	24.80	3.7	0.78	21.08
23	2 (Dolomitic)	0	0	0	0	0	1.0	0.62	62.00	5.2	1.22	23.46

N.B. Tons/Acre converted to grams/pot for use in above experiment.
Sources of nutrients:
Lime Ca $(OH)_2$ except where dolomitic lime is specified
N - NH_4NO_3 (33.5%N)
P205 - Triple superphosphate (46% P205)
K_2O - K_2SO (54% K20)

Mgo - $MgSO_4$ 7H20
Minor Elements - Frit 502.

95. COCONUT FERTILISER TRIAL - CENTRAL FARM

Soil Type Red bank Clay loam

OBJECT: To observe the effect upon coconut growth, time of bearing and eventual yield, of various fertilizers.

LAYOUT: Green Malayan Dwarfs planted 21' x 21' in September, 1958. Pairs of rows occupy cambered beds 42' wide. No replicates. Six treatments at two levels. Plots two rows wide and six palms long with one guard palm in each row.

TREATMENT: The following applications to be used twice per year:-

	1959		1960		1961	
	per palm	per plot	per palm	per plot	per palm	per plot
N_1	½ lb.	6 lb.	1 lb.	12 lb.	1 lb.	12 lb.
P_1	¼ lb.	3 lb.	½ lb.	6 lb.	½ lb.	6 lb.
K_1	¼ lb.	3 lb.	½ lb.	6 lb.	½ lb.	6 lb.
NaCl (s)	¼ lb.	3 lb.	½ lb.	6 lb.	½ lb.	6 lb.

N_2, P_2, K_2, S_2 use twice this amount.

FERTILIZED 30/5/62

	Per palm	per plot
N_1	= 2 lbs.	24 lbs.
P_1	= 1 lb.	12 lbs.
K_1	= 1 lb.	12 lbs.
S_1	= 1 lb.	12 lbs.

N_2, P_2, K_2, and S_2 use twice this amount.

TREATMENT	AV. NO LEAVES PER PALM		NO. OF BEARING PALMS PER PLOT	
N_2	20)	40	8)	17
N_1	20)		9)	
P_2	16)	30	6)	9
P_1	14)		3)	
K_2	16)	29	8)	12
K_1	13)		4)	
2NP	20)	34	8)	12
NP	14)		4)	
2NK	19)	36	9)	16
NK	17)		7)	
2PK	18)	35	7)	15
PK	17)		8)	

TREATMENT	AV. NO. LEAVES PER PALM		NO. OF BEARING PALMS PER PLOT	
2NPK	19)	40	8)	18
NPK	21)		10)	
2S	19)	36	8)	15
S	17)		7)	

The results shown above are far from significant, however due to the loss of some palms in plots through Gru-Gru beetle (Rhyncophorus palmarum) average measurements have been taken, this possibly lessening the accuracy of the results.

96. CORN:

1962 Crop - Central Farm

Seed drilled 3' between rows, 8 - 10" in row.

Fertilizer applied at rate of 150 lbs. per acre of an 18 -46 - 0 compound fertiliser (Dimon).

The local yellow corn yielded 2000 lbs./acre
The Mexican white hybrid yielded 3000 lbs./acre

Both of the above yields are approximate and were taken from the best fields.

Total production at Central Farm was 2000 cargos approximately.

1 cargo - approximately 90 lbs. shelled corn.

Table D shows a list of corn varieties and yields obtained from A.I.D. for trial at Central Farm. The yields are all relative as only about 30 seeds of each type were available for planting.

TABLE D

ENSAYO UNIFORME DE RENDIMIENTO, SERIE "BA" NO. 14

No. Var.	NOMBRE	ORIGEN	I YIELD COB NO. LBS.		II YIELD COB NO. LBS.		III YIELD COB NO. LBS.		IV YIELD COB NO. LBS.	
1	Rocamex H - 503	Mex. 1962	7 13	22	23 19	36	56 18	36	69 18	39
2	Rocamex H - 509	Cot. 60-B	21 17	37	36 12	25	46 20	40	77 17	47
3	Diacol H-102	S - 62 - F	18 12	36	27 12	33	57 15	40	70 15	47
4	Diacol H-151	S - 61 - Ag	6 19	57	38 22	54	47 25	50	68 17	47
5	Obregon (Guaĭcai- pink) SD 2	Ven. 1961	8 19	40	35 12	30	45 18	38	76 21	47
6	Poey T-23	Alex. U.S.A.-62	9* 19	39	37 15	33	38 24	44	82 22	44
7	Poey T-46	Alex. U.S.A.-62	5 5	9	26 7	19	61 12	24	87 --	--
8	Poey T-63	Alex. U.S.A.-62	10 21	53	39 --	--	40 17	48	83 24	54
9	Eto Bl. x Venez.	3 C.R. 1962	17 19	40	29 19	43	63 9	29	75 16	41
10	Sicanigha x Eto Bl.	C.R. 1962	4 28	42	25 15	44	49 15	38	86 21	61
11	Eto. Bl. x V-520-C	C.R. 1962	11 13	32	40 22	61	59 11	31	74 17	33
12	Sint. Nic. 2	M - 16 - B	16 12	56	30 8	25	55 13	47	78 12	44
13	Exp. Nic. H-1	M - 62 - R	12 14	50	41 13	25	60 13	41	81 17	43
14	Exp. Nic. H-2	M - 60 - R	3 --	--	24 10	30	50 --	--	84 --	--
15	Salv. H - 1	E.S. 1962	19 1	2	42 13	43	61 4	16	73 4	12
16	Salv. H - 2	E.S. 1962	13 11	37	31 --	--	51 11	40	85 15	48
17	Mix. 1	Guat. 1962	20 --	--	43 12	28	62 21	41	79 16	36
18	Amarillo Salvadoreño	E.S. 1961	2 20	24	23 14	36	54 10	30	82 12	35
19	F.M. 4	Ven. 1961	14 12	25	44 11	27	52 10	24	71 13	29
20	Tiuna	Ven. 1961	22 18	42	33 14	36	65 15	38	80 15	44
21	Compuesto Salvadoreño	Mex. 1961	15 4	16	32 7	26	66 9	40	88 10	45
22	Variedad local		1 13	28	54 10	44	53 15	50	72 12	36

97. VEGETABLES:

The table attached gives details of a number of vegetable trials carried out at Central Farm in the dry season. Note that the yields of the Cantaloupes and watermelons are far below normal due to the excessive damage to fruit by Racoons and Possums. (Table E).

98. Four varieties of short day onions were planted directly into a fine seed bed and the seed slightly covered. The seed was sown in October and the plants were thinned out when 4-5" high. Throughout the growing period they received approximately 200 lbs. per acre of an N, P, K fertiliser.

Variety	Yield
Crystal wax	10350 lbs. per acre
Texas early	12840 lbs. per acre
Granex	1770 lbs. per acre
Excel Bermuda 986	4200 lbs. per acre
Planting date	9th October
Harvesting date	20th February

99. The yields of the varieties Granex and Excel Bermuda were reduced considerably due to a serious attack by a type of smut fungus which killed off all the leaves before the bulb matured.

TABLE E

VEGETABLE TRIALS - CENTRAL FARM 1962

SEEDS SUPPLIED BY A.I.D.

V A R IETY	DATE PLANTED	DATE GERMINATED	DATE TRANSPLANTED	DATE FLOWERING	DATE FERTILIZED	TYPE FERTILIZER	NO OF HARVESTING	AMOUNT OF FRUIT HARVESTED	TOTAL SPOILED FRUITS (LBS.)	TOTAL GOOD FRUITS (LBS.)	YIELD LBS. (PER ACRE)
Tomato Pearson improved	7.3.62	12.3.62	5.4.62	26.5.62	April & May	Nitrogen plus 16-46-0	13	302	15 lbs.	86 lbs.	12,556 lbs/acre
Tomato Rutgers 8820	7.3.62	13.4.62	5.4.62	26.4.62	April & May	Nitrogen plus 18-46-0	13	328	12 lbs.	83 lbs.	11,972 lbs/acre
Tomato Roma	7.3.62	12.3.62	6.4.62	28.4.62	April & May	Nitrogen plus 18-46-0	13	712	16 lbs.	90 lbs.	12,994 lbs/acre
Tomato, Homestead	7.3.62	12.3.62	6.4.62	30.4.62	April & May	Nitrogen plus 18-46-0	12	321	10 lbs.	70 lbs.	10,074 lbs/acre
Tomato, Manalucie	7.3.62	13.3.62	6.4.62	28.4.62	April & May	Nitrogen plus 18-46-0	13	208	8 lbs.	60 lbs.	8,614 lbs/acre
Cucumber, Ashley	21.3.62	26.3.62	27.4.62	-------	April & May	Nitrogen plus 12-12-17-2	5	133	3 lbs.	69 lbs.	9,928 lbs/acre
Cantaloupe Edisto	20.3.62	28.3.62	------	26.4.62	April & May	Nitrogen plus 12-12-17-2	4	12	6 lbs.	18 lbs.	2,480 lbs/acre
Cantaloupe Honey dew	20.3.62	28.3.62	------	22.4.62	April & May	Nitrogen plus 12-12-17-2	3	9	2 lbs.	14 lbs.	1,898 lbs/acre
Watermelon Charleston Gray	20.3.62	27.3.62	------	25.4.62	April & May	Nitrogen plus 12-12-17-2	5	14	14 lbs.	91 lbs.	
Cantaloupe Rio Gole	20.3.62	26.3.62	------	22.4.62	April & May	Nitrogen plus 12-12-17-2	4	27	7 lbs.	47 lbs.	5,305 lbs/acre
Cantaloupe Smith Perfect	20.3.62	26.3.62	------	26.4.62	April & May	Nitrogen plus 12-12-17-2	3	27	5 lbs.	58 lbs.	6,555 lbs/acre
Okra Louisiana Green Velvet	22.3.62	29.3.62	------	28.4.62	April & May	Nitrogen plus 12-12-17-2	20	405	—	26 lbs.	13,450 lbs/acre
Okra Clemson Spineless	22.3.62	28.3.62	------	28.4.62	April & May	Nitrogen plus 12-12-17-2	20	585	—	33 lbs.	17,754 lbs/acre
Sweet Pepper Yolo Wonder	22.3.62	29.3.62	16.4.62	16.5.62	April & May	Nitrogen plus 12-12-17-2	6	258	—	68 lbs.	11,764 lbs/acre

PANGOLA ROTATIONAL GRAZING TRIAL - CENTRAL FARM

1961 - 1963

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produced on the 22 acre grazing area at this level of fertilisation. A total of 18 steers were sold for slaughter off the trial, the average weight of the dressed carcase was 556 lbs. and the total weight of the 18 carcasses was 10027 lbs. The average age of the steers when finished was 42 months. The difference in performance of the various types of cattle used in this phase of the trial is illustrated by a Jersey x Local steer which produced a carcass weight of 584 lbs. at 49 months and a Red Poll x Local steer with 592 lbs. carcass weight, of superior quality at 37 months. The average daily gain per head obtained for the whole from the group grazed on this area over a 223 day period was 1.46 lbs.

107. During the early part of September the area was attacked by froghopper causing damage to large areas in most sections. The whole area was sprayed with 57% malathion at ½ pint per acre which arrested the attack. The control was not however long lasting and it was found that an effective control was got by mowing the areas as low as possible and burning the swaths and fertiliser applied to the new growth. Whilst 300 lbs. per acre per annum Sulphate of Ammonia was sufficient to maintain a good stand of grass it was not enough to produce the high yields usually associated with Pangola.

108. It was noted that the cattle were reluctant to graze the area where there was very high concentration of nitrogen, applied by a faulty distributor which indicates a palatability factor and an economic one.

109. Pangola has proved to be a fairly easily managed pasture grass, it is readily acceptable to cattle at all stages of growth, except in a mature state of long standing, it responds readily to fertilising, withstands trampling and intensive grazing. It appears to produce a soft fat loose grained meat so the grazer preparing cattle for the export market might find that a period of finishing his fat stock on a harder grass would be profitable.

110. The cost of establishing pangola is high requiring the use of machinery for this and subsequent management. Nitrogen is essential in the first year. It is not recommended for farmers who wish to establish grass milpa fashion. It is prone to intensive froghopper attack and although the stunt virus has not yet reached the country as it has in other territories, this factor must not be over looked when planning large scale pasture establishment programmes.

111.
PHASE I

Total Grazing days	- 4104
No. of steers	- 32
Average No. of grazing days per individual	- 128
Total liveweight gain	- 6496 lbs.
Average liveweight gain per head over total grazing period	- 171 lbs.
Total herbage consumed on 22 acre area	156,265 lbs.
Average gain per day per head	- 1.6 lbs.
Total herbage consumed per head	- 4883 lbs.

Herbage consumed per head per day	- 38 lbs.
Now 38 lbs. of Fresh matter	- 1.6 lbs. liveweight
22.5 lbs. of Fresh matter	- 1 lb. liveweight gain.
Dry Matter (Average) for 1st phase	- 34.0%
. . 12.9 lbs. Dry Matter	- 1.6 lb. liveweight
. . 8 lbs. Dry Matter	- 1 lb. liveweight gain.
Total Dry Matter consumed	- 53,130 lbs. gain
Average crude protein during 1st phase	- 6.6%
Lbs. of Crude Protein on Dry Matter basis consumed	- 0.85 lbs. Protein Crude/
	- 1.6 lbs. liveweight gain

112.

2nd PHASE

Total grazing days	- 7883
No. of cattle	- 48
Average No. of grazing days per individual	- 164
Total liveweight gain	- 8226 lbs.
Average liveweight gain per head over total grazing period	- 203 lbs.
Average gain per day per head	- 1.0 lbs.
Total herbage consumed on 22 acre area	- 351,633 lbs.
Total herbage consumed per head	- 7,326 lbs.
Herbage consumed per head per day	- 45 lbs.
Now 45 lbs. fresh matter	- 1.0 lbs. liveweight gain.
Dry Matter (Average) for 2nd phase	- 34.0%
. . 15.3 lbs. Dry Matter	- 1.0 lbs. liveweight gain.
Average crude Protein during 2nd phase	- 7.3%
Lbs. of Crude Protein on Dry Matter basis consumed.	- 1.10 lbs. Crude Protein
	- 1.0 lbs. liveweight gain

113.

Costings - 1st Phase

Over 280 day period total liveweight gain over 22 acres - 6496 lbs. beef on hoof

Over 280 day period total liveweight gain per acre - 295 lbs. beef

Over 365 day period total liveweight gain per acre - 384 lbs. beef

384 lbs. beef at 19¢ per lb. - $72.96

Less 300 lbs. Sulphate of Ammoniaat 3½¢ per lb. - 10.50

$62.46 per acre per annum.

114.

2nd PHASE

Over 377 day period total liveweight gain over 22 acres - 8226 lbs. beef

Over 377 days period total liveweight gain per acre - 374 lbs. beef

Over 365 days period total liveweight gain per acre - 362 lbs. beef

362 lbs. beef at 19¢ per lb. - $68.78

Less 450 lbs. Sulphate of Ammonia at 3½¢ p.lb. - 15.75

$53.03 per acre per annum.

In phase I approximately 32 head were run on the 22 acres

In phase II 48 head were run on 22 acres.

DISCUSSION OF RESULTS

115. The figure of 22.5 lbs. and 45 lbs. of fresh matter for 1 lb. liveweight gain in the 1st and 2nd phase respectively are obviously the result of errors in the field. They are now published as a true record of the trial described, but with the knowledge that they are obviously far below what could be reasonably suspected.

116. The above report describes the two phases of the Pangola Rotational Grazing Trial now completed. The first phase at a fertilisation level of 300 lb. of Sulphate of Ammonia per acre per annum which was increased to 450 lbs. per acre in the second phase.

117. Hasty conclusions should not be drawn from these initial figures but a reliable comparison should be obtained after completing three more phases which will raise the level to 1000 lb. Sulphate of Ammonia per acre per annum.

118. Details for Off Pasture Liveweights for 1961, 1962 - 63 will be found after Appendix V.

SUGAR CANE RESEARCH - 1962

FERTILIZER TRIALS

119. TRIAL NO. 1

The fertilizer treatments, applied 6 weeks after planting, or six weeks after cutting, are:

A No fertilizer applied

B 200 lb/acre Sulphate of Ammonia; 100 Triple Superphosphate

C 400 lb/acre Sulphate of Ammonia; 100 Triple Superphosphate

D 200 lb/acre Sulphate of Ammonia; 200 Triple Superphospate

E 400 lb/acre Sulphate of Ammonia; 200 Triple Superphosphate

This trial was planted on red soil at Xaibe in June, 1957, and has now been reaped four times. The previous yields together with those of the 1962 reaping are given below:

YIELD OF CANE - TONS CANE PER ACRE (TC/A)

	Harvested May 1959	Harvested May 1960	Harvested July 1961	Harvested August 1962
A	30.4	12.7	17.2	10.2
B	46.1	24.4	42.7	26.3
C	43.7	23.2	43.2	26.0
D	51.9	26.6	44.5	32.8
E	50.4	28.5	49.7	29.7
Lowest Significant Difference (P = 5%)		£6.8	£7.2	£4.1

TRIAL NO. 2

NITROGEN LEVELS

120. The fertilizer treatments, applied 6 weeks after planting or six weeks after cutting are:

N1 100 lb/acre Sulphate of Ammonia

N2 200 lb/acre " " "

N3 300 lb/acre " " "

N4 400 lb/acre " " "

This trial was planted on black Louisville clay at the Cane Station, San Roman in May 1959, andhas now been harvested twice. The averaged yields are given below for the plant and 1st ratoon crop.

YIELD OF CANE - TONS CANE PER ACRE (TC/A)

	Harvested February 1961	Harvested February 1962
N1	50 5	24.9
N2	49.2	24.9
N3	52.7	28.7
N4	51.5	28.3
Lowest significant Difference (P = 5%)	± 4.5	± 3.2

121. TRIAL NO. 3

Phosphate Levels

The fertilizer treatments are as follows:

P1 60 lb/acre Triple Superphosphate

P2 110 lb/acre " "

P3 160 lb/acre " "

This trial was planted on black Louisville clay soil at San Roman in May 1959. It has now been harvested as plant cane and first ratoon. The averaged yields of the 4 replicates are given below:

YIELD OF CANE.- TONS CANE PER ACRE (TC/A)

Treatment	Harvested February 1961	Harvested February 1962
P1	49.9	20.8
P2	52.9	23.1
P3	56.1	25.6
Lowest Significant Difference (P = 5%)	4.4	1.2

122. TRIAL NO. 4

Time of Application of Nitrogen Fertilizer

This trial investigates the effect of the time of application of nitrogenous fertilizer, in the form of sulphate of ammonia, on the final yield of cane. Sulphate of ammonia was applied at the rate of 400 lb/acre at 9 weeks (treatment A), and at 24 weeks (treatment B). The cane had previously been cut as 4th ratoon in March and this trial, therefore, was designed to answer the question whether it is better to apply the nitrogenous fertilizer soon after cutting the crop, in the early or middle part of the February - May

dry season, or whether it is better to wait until the rains arrive in June, before applying the fertilizer.

The treatments A and B were replicated once on each of five different cane varieties. As varietal differences were insignificant, the mean yields are given below:

Treatment A, early application- 32.7 tons cane per acre

Treatment B, late application - 31.0 tons cane per acre

These differences are not statistically significant,,but it does seem that there is a benefit obtained from applying the nitrogenous fertilizer soon after cutting the cane, even though the rains may not be expected for a considerable time.

123. TRIAL NO. 5

Types of Phosphatic and Nitrogenous Fertilizers

The fertilizer used in 1962 by the Cane Farmers' Association was recommended by the Department of Agriculture. It is an 18-46-0 NPK compound fertilizer named "Dimon". Previously, both sulphate of ammonia and triple superphosphate had been widely used, generally indiscriminately with very few farmers being able to understand the differences between them. The compound fertilizer contains similar amounts of N and P as those of the two simple fertilizers previously used.

In this experiment, the efficiency of the two single element fertilizers, sulphate of ammonia and triple superphosphate, is compared with that of the compound fertilizer Dimon. Treatments are as follows:

A Dimon (18-46-0, NPK) applied to give an equivalent dressing of N per acre as 400 lb/acre sulphate of ammonia.

B Sulphate of ammonia (21% ^{o}N) at the rate of 400 lb/acre, plus triple superphosphate (46% P_2O_5) to give an equal application rate of P_2O_5 with that contained in the Dimon of treatment A.

The treatments were applied once to each of five different cane varieties, the averaged results being as follows: treatment A 31.1 tons cane per acre, treatment B 31.0 tons cane per acre.

124. TRIAL NO. 6

Types of Phosphatic and Nitrogenous Fertilizers

In this experiment the fertilizers compared are Dimon (18-46-0), Sulphate of Ammonia, and Ammonium sulphate nitrate. Treatments are as follows:

1 Dimon 18-46-0 at the rate of 200 lb/acre

2 Sulphate of Ammonia 21%N, applied so as to give the same rate of N per acre as in treatment 1 above, plus triple superphosphate, 46% P_2O_5, to give the same rate of P_2O_5 per acre as that of treatment 1 above.

3 Ammonium sulphate nitrate, 26%N, applied so as to give the same rate of N per acre as in treatment 1 above, plus Triple superphosphate, 46% P_2O_5 to equal the rate of P_2O_5 applied in treatment 1 above.

The treatments are replicated twice on 6th ratoon cane at San Roman. The Plots should be harvested early in the 1963 season.

125. TRIAL NO. 7

Nitrogen, Phosphate and Potash Levels

The fertilizer treatments which were applied six weeks after planting or cutting the cane are as follows:

Treatments	Fertilizer lb/acre		
	Sulphate of Ammonia	Triple Superphosphate	Muriate of Potash
A	0	0	0
B	200	100	0
C	300	100	0
D	400	100	0
E	400	200	0
F	400	200	100
G	500	200	0
H	500	200	100
I	600	200	0

The trial is on red soil at Xaibe and has now been harvested 4 times. The previous plot yields together with those of 1962 are given below:

TONS CANE PER ACRE:

FERTILIZER TREATMENT	HARVESTED MAY 1959	MAY 1960	JUNE 1961	AUGUST 1962
A	12.0	8.0	12.3	6.6
B	25.3	28.6	41.0	24.8
C	28.9	27.7	38.9	24.8
D	32.2	30.5	38.1	28.3
E	34.7	39.7	45.9	32.9
F	36.2	38.5	50.8	28.2
G	43.0	36.2	46.7	32.0
H	41.9	39.9	48.0	32.6
I	37.9	33.5	42.6	27.0
Lowest Significant Difference (P = 5%)	—	± 5.5	± 7.9	± 7.0

26. TRIAL NO. 8

Nitrogen, Phosphate and Potash Levels

The fertilizer treatments are as follows:

A - No fertilizer applied

B - 200 lb/acre Sulphate of Ammonia; 50 Triple Superphosphate

C - 200 " " " " ; 100 " "

D - 200 " " " " ; 150 " "

E - 300 " " " " ; 50 " "

F - 300 " " " " ; 100 " "

G - 300 " " " " ; 150 " "

H - 400 " " " " ; 50 " "

I - 400 " " " " ; 100 " "

J - 400 " " " " ; 150 " "

K - 300 " " " " ; 100 " "

L - 400 " " " " ; 150 " "

In addition, plots K and L received 50 lb/acre of Muriate of Potash.

N.B. No fertilizer was applied after this trial was harvested in 1961.

This trial was planted on black Louisville type of soil in 1956. It has been harvested 5 times. The previous yields together with those of the 1962 reaping are given below:

TONS CANE PER ACRE

	FEBRUARY 1958	MAY 1959	JUNE 1959	MAY 1961	JULY 1962
A	26.6	40.5	12.8	29.6	22.9
B	39.3	53.6	14.9	39.6	28.8
C	42.4	53.1	19.8	41.4	26.9
D	34.6	53.9	16.5	43.7	29.5
E	34.3	55.1	18.7	36.7	27.2
F	47.6	55.4	15.0	41.1	31.2
G	43.4	58.9	18.5	43.6	31.2
H	38.4	48.6	16.1	36.3	28.0
I	35.7	53.9	19.2	37.7	27.6
J	46.1	55.2	18.8	40.2	28.4
K	40.4	51.3	19.3	45.0	31.0
L	40.8	53.2	20.0	39.8	28.5
Lowest Significant Difference (P = 5%)			± 3.9	± 5.4	± 4.2

127. TRIAL NO.9

3 x 3 x 3 NPK Fertilizer Trial

The following are the fertilizer levels applied 6 weeks after planting the cane in July 1960:

N 0	100 lb/acre	Sulphate of Ammonia
N 1	200 "	" " "
N 2	300 "	" " "
P 0	50 "	Triple Superphosphate
P 1	100 "	" "
P 2	150 "	" "
K 0	0 "	Muriate of Potash
K 1	50 "	" " "
K 2	100 "	" " "

The variety POJ2878 was used and the trial is on red soil at San Andres in the Xaibe area. The cane was reaped in February, 1962, and the mean yields of the plots are given below:

	TONS CANE PER ACRE
N0	45.2
N1	39.8
N2	43.3
P0	30.4
P1	49.2
P2	48.6
K0	39.9
K1	46.8
K2	41.5
LSD (P = 5%)	± 17.2

128. TRIAL NO. 11

3 x 3x3 NPK Fertilizer Trial

The fertilizer levels are as follows:

N 0,1, 2 = 100, 250, 400 lb/acre Sulphate of Ammonia

P 0,1, 2 = 100, 200, 300 lb/acre Triple Superphosphate

K 0,1, = 0, 100, lb/acre Muriate of Potash

This trial was superimposed on cane planted by Mr. J. Noguera in May, 1960, at Calcutta. The soil is red Xaibe type with a large amount of stones. The trial was harvested in February, 1962, by the Department of Agriculture.

Plot yields have been converted into tons cane per acre and averaged below to show the main treatment effects.

	TONS CANE PER ACRE				
N0	54.3	P0	49.9	K0	55.4
N1	51.4	P1	57.0	K1	57.2
N2	63.1	P2	62.0		
LSD (P = 5%)	± 13.0		± 13.0		± 15.9

129. TRIAL NO. 12

3 x 3 x 2 NPK Fertilizer Trial

This trial is similar to trial No. 11 fertilizer application levels being:

N 0, 1, 2 = 100, 250, 400 lb/acre Sulphate of Ammonia

P 0, 1, 2 = 100, 200, 300 lb/acre Triple Superphosphate

K 0, 1 = 0, 100 lb/acre Muriate of Potash

The cane was planted in June, 1960, at San Pablo in an area where Plantations Ltd. proposed at the time to expand their cane cultivation. The soil is black clay. The trial was harvested by the Department of Agriculture in March, 1962. Plot yields have been converted into tons cane per acre and averaged below to show the main treatment effects.

TONS CANE PER ACRE

N0	49.5	P0	47.0	K0	47.1
N1	47.1	P1	45.9	K1	48.9
N2	47.6	P2	51.2		
LSD (P = 5%)	± 8.0		± 8.0		± 9.8

130. TRIAL NO. 13

3 x 3 x 2 NPK Fertilizer Trial

This trial is in the same series as trials No. 11 & 12. Fertilizer treatments, therefore, are:

N 0, 1, 2 = 100, 250, 400 lb/acre Sulphate of Ammonia

P 0, 1, 2 = 100, 200, 300 lb/acre Triple Superphosphate

K 0, 1 = 0, 100 lb/acre Muriate of Potash

This trial was on cane belonging to Plantations Ltd. at Santa Cruz. It was planted in September, 1960, and harvested at 17 months old in February, 1962. The top soil is very shallow and is a grey, loamy clay, subsoil is white chalk marl. Below are given the plot yields in tons cane per acre and averaged to show the main treatment effects.

TONS CANE PER ACRE

N0	48.5	P0	46.1	K0	47.0
N1	46.2	P1	46.6	K1	47.0
N2	46.4	P2	48.3		
LSD (P = 5%)	± 2.6		± 2.6		± 3.8

VARIETY TRIALS

131. TRIAL NO. 14

This trial, planted on black soil at the Cane Station, San Roman, in 1956 has now been harvested five times. The yields are recorded below:

TONS CANE PER ACRE

VARIETY	APRIL 1958	MAY 1959	MAY 1960	MARCH 1961	JANUARY 1962
POJ2878	58.0	32.0	15.9	40.7	28.6
B 41227	54.9	24.5	23.1	45.2	35.7
B 41211	61.8	28.0	17.3	40.8	35.0
B 4098	60.4	27.0	25.4	45.7	36.0
B 37161	51.9	15.0	13.6	29.8	27.5
LSD (P = 5%)	----	----	± 3.7	± 3.6	± 8.7

WEIGHTED YIELDS PER ACRE (POJ = 100)

	Plant Crop	1st Ratoon	2nd Ratoon	3rd Ratoon	4th Ratoon	Total	Mean.
POJ2878	100	100	100	100	100	500	100
B41227	95	77	145	111	125	553	111
B41211	107	87	109	100	122	525	105
B37161	89	47	86	73	96	391	78
B4098	104	84	146	112	126	572	114

132. TRIAL NO. 15

This variety trial was planted in 1957 on red soil at Xaibe. It has now been harvested four times; the yields are given below:

VARIETY	HARVESTED May 1959	June 1960	August 1961	July 1962
POJ2878	34.5	29.7	35.3	25.6
B41227	48.0	33.6	35.7	28.7
B41211	40.5	20.5	24.8	27.3
B37161	36.5	27.5	27.5	24.8
B3337	41.0	26.4	30.3	29.0
B4098	40.0	35.7	37.7	27.2
B34104	42.5	23.9	29.6	24.4
LSD(P= 5%)	———	± 7.4	± 7.5	± 3.9

WEIGHTED YIELDS PER ACRE (POJ= 100)

	Plant Crop	1st Ratoon	2nd Ratoon	3rd Ratoon	Total	Mean
POJ2878	100	100	100	100	400	100
B41227	138	113	101	112	464	116
B41211	117	69	70	107	363	91
B37161	105	93	78	97	373	93
B3337	118	89	86	113	406	101
B4098	117	120	107	106	450	112
B34104	123	80	84	95	382	95

MISCELLANEOUS TRIALS

133. TRIAL No. 22

Planting Distance Between Rows and Within Rows

This trial is designed to investigate the effects on final yield of cane of various distances between rows combined with various distances between stools in the rows. Treatments, combined into a Graeco latin square type of experimental design are as follows:

A = Cane Rows 4 ft. apart

B = " " 5 ft. apart

C = " " 6 ft. apart

1 = Continuous planting, i.e. tops planted end to end

2 = Setts 2 ft. apart in the row

3 = Setts 3 ft. apart in the row.

The commercial cane POJ2878 was used for this trial which was planted in January, 1961, on black soil at San Roman. Harvesting was carried out in March, 1962, with the following results:

PLOT YIELDS - TONS CANE PER ACRE

	1	2	3	Mean
A	27.8	25.5	23.1	25.5
B	22.2	20.6	21.9	21.6
C	20.5	21.8	19.7	20.7
Mean	23.5	22.6	21.6	22.6
LSD (P= 5%)				± 3.6

134. TRIAL NO. 24

TRACE ELEMENTS

An experiment which investigates the necessity of applying to cane growing in this area the seven most important trace elements was superimposed on ratoon cane at San Roman in August, 1961. The trace elements and the rates are given below:

Zinc - 30 lb/acre; chelated form containing 14.2% zinc

Manganese- 30 " " " " 12% manganese

Iron - 30 " " " " 12% iron

Copper - 50 " copper sulphate

Molybdenum- 2½ " sodium molybdate

Boron - 25 " borax containing 11.3% boron

Magnesium-75 " Kieserite containing 80% magnesium sulphate.

Treatments consist of: A, no trace elements; B , all trace elements; C to I, all trace elements, except one different one for each treatment. Leaf material was collected when the cane was 6 months old and sent off to Scotland for analysis, the averaged figures for the two replicates are given below:

Results Expressed as "Parts per Million" ppm or Percentage (%) in Oven Dry Material

Treatments	ppm Zinc	ppm Manganese	ppm Iron	ppm Copper	ppm Boron	% Magnesium
No trace elements	10.75	25	47	3.65	5.80	0.09
All " "	15.50	38	62	3.15	4.90	0.10
All T.E. except Zinc	10.50	37	64	3.30	4.35	0.10
All " " Manganese	16.50	27	50	3.40	5.50	0.09
ALL " " Iron	16.00	31	42	3.75	5.10	0.10
All " " Copper	16.25	32	42	3.30	5.55	0.09
All " " Molybdenum	14.25	33	67	3.00	5.30	0.08
All " " Boron	13.75	32	51	3.70	5.00	0.10
All " " Magnesium	14.75	23	46	3.35	4. 55	0.09

The trial was not reaped this year but should be harvested in January or early February, 1963.

135. CONCLUSIONS FROM EXPERIMENTAL WORK CARRIED OUT IN 1962

A. Fertilizer Trials

Two trials grown on red soil were harvested as plants in 1962 (Nos. 9 and 11). In both instances there was only a small response to nitrogenous fertilizers and almost no response to potash. But in each trial there was a big yield increase due to phosphate applications. Thus, in No. 9, increasing the triple superphosphate application from 50 to 100 lb/acre produced a yield increase of over 8 tons cane/acre. In trial 11 where the phosphate application rates were higher, increasing the phosphate dressing from 100 to 200 and from 200 to 300 lb/acre triple superphosphate produced yield increases of over 7 and 5 tons cane per acre respectively.

136. These results are similar to those obtained from the two plant cane trials reaped in 1962 on the black Louisville type of clay soil, (Nos 12 and 13). There are no marked responses to either nitrogen or potash but phosphates have produced yield increases. These increases are not as great as those produced on the red soil, however.

137. With the ratoon crops harvested, the most noticeable effect on final yield of cane has been produced by the application of phosphates. In trial No.1, by increasing the phosphate level from 100 to 200 lb/acre triple superphosphate, a large increase in yield of cane has been produced, but this is especially so at the lower of the two levels of sulphate of ammonia- there is no direct response to increasing the nitrogen level itself. Yield increases have similarly been obtained in trials No. 3 and 7 by increasing the application rate of phosphates.

138. Only in trial No. 2 has there been significant yield response to nitrogen, and here the 300 lb/acre sulphate of ammonia has proved adequate. However, from the results of trial No. 4 there is a suggestion that an early application of nitrogen is more efficacious than a late application when dry weather follows reaping.

139. Trial No. 5 has shown that the compound fertilizer, Dimon 18-46-0, used by the British Honduras Cane Farmers' Association, has proved to be as effective as similar amounts of nitrogen and phosphate applied separately as Sulphate of Ammonia and Triple superphosphate. However, a further trial (NO. 6) comparing these fertilizers is due to be reaped in early 1963.

140. Residual fertilizer effects have been examined in trial No. 8, but none was apparent for nitrogen and potash. With phosphate, there is a small residual effect but of less than 2 tons cane per acre.

B. Variety Trials

141. The two recommended varieties B4098 and B41227 have again this year outyielded the standard commercial cane, POJ2878. In

the 4th ratoon trial they outyielded POJ2878 by 26 and 25% respectively, and in the 3rd ratoon trial by 6 and 12% respectively.

142. Similarly, in the two plant cane trials, B4098 and B41227 outyielded the standard cane by 12 and 3% respectively in one trial, and 22 and 35% respectively in the other. However, the three other cane varieties which the Department of Agriculture is considering for recommendation to Cane Farmers, were also harvested in these two plant cane trials, and each one convincingly outyielded the commercial POJ cane. In one trial B52298, B47149 and B4744 outyielded POJ2878 by 26%, 23% and 13% resp.; and in the second trial by 30%, 15% and 9% resp.

C. Planting Distance between Rows and Within Rows

143. Only one trial was reaped in this series, but a significantly better yield of cane was obtained from rows 4ft. apart as compared to rows 5 ft. or 6 ft. apart. Also continuous planting of cane setts end to end produced a better cane yield than when setts were planted either 2 ft. or 3 ft. apart within the rows. A second trial in this series (No. 22) is due to be reaped early in 1963.

144. VISITORS

H.E. Sir Peter Stallard K.C.M.G., C.V.O., M.B.E., Governor.

Hon. G. Price, First Minister

Hon. A.A. Hunter, Minister for Natural Resources

Hon. L. Rogers, Minister of Labour

Mr. M. Porcher C.M.G., O.B.E., Chief Secretary

Mr. R. Piper, Colonial Office, Asst. Secretary.

Dr. G. Correa)
)
Dr. K. Naidn)
) U.N. Economic Mission.
Dr. Patil)
)
Ing. H. Yanes)

Prof. René Dumont, F.A.O. Agricultural Adviser to U.N. Economic Mission.

Dr. G.K. Maliphant)
)
Dr. D.B. Murray) Caribbean Citrus Research
) U.W.I. Trinidad.
Dr. J. Spence)
)
Dr. I. Hosein)

Ing. Manuel Martinez Lacarra)
) Mexico City.
Dr. Sanchez Navarette)

(M.K. CHOPIN)
Ag. Chief Agricultural Officer

APPENDIX I

LIVESTOCK

LIST OF MAIN TREATMENTS CARRIED OUT BY AG. VETERINARY OFFICER FARM DEMONSTRATORS & LIVESTOCK ASSISTANTS IN 1962

Diseases or Treatments	Horses	Cattle	Pigs	Sheep	Poultry	Dogs
Worming	[illegible]	468	349	117	1202	295
Castration	75	167	346	62		17
Lampas	5	-	-			
Mange	31	1	4			5
Wounds & screw-worm infection	71	136	19	30		9
Colic	21	-				
Retention of Urine	6	-				
Scouring	-	2				
Mastitis	-	17				
Infectious Warts	4	46				
Fowl Pox	-	-			235	
Coccodiosis	-	-			866	
Pneumonia all causes	2	1				
Tetanus	1	1				
Influenza	12	43				2
Coryza	-	-				
Fowl Cholera	-	-			119	
Removal Placenta		17				
Spraying	20	401				
Preventive Vaccination.						
Newcastle Disease					250	
Hog Cholera						
Rabies						

APPENDIX II

1962

SLAUGHTER HOUSE RETURNS FOR THE COUNTRY

	CATTLE			PIGS			SHEEP		
MONTH	NUMBER	TOTAL DRESSED WT.	AV. DRESSED WT./ANIMAL	NUMBER	TOTAL DRESSED WT.	AV. DRESSED WT./ANIMAL	NUMBER	TOTAL DRESSED WT.	AV. DRESSED WT. ANIMAL
January	264	70,881	268	535	34,131	64	16	406	25
February	239	68,339	286	541	35,429	65	12	244	20
March	330	97,338	295	130	22,154	170	8	210	26
April	305	82,473	270	281	18,606	66	5	394	79
May	313	90,886	290	280	19,163	69	6	151	25
June	274	82,156	300	418	24,411	58	7	231	33
July	287	79,775	278	384	21,606	56	11	304	28
August	301	88,686	295	387	20,281	52	5	167	33
September	299	84,156	281	316	17,643	56	22	836	38
October	228	64,769	284	464	26,593	57	3	168	56
November	284	77,673	274	492	29,469	60	19	478	25
December	287	73,323	255	620	34,930	56	6	211	35

APPENDIX III

METEROLOGICAL DATA - 1962

MONTHS	MEAN MONTHLY MAXIMUM T				MEAN MONTHLY MINIMUM T				RELATIVE HUMIDITY % MONTHLY MEAN.		
	AIRPORT BELIZE	STANN CREEK	TOLEDO	CENTRAL FARM	AIRPORT BELIZE	STANN CREEK	TOLEDO	CENTRAL FARM	AIRPORT BELIZE	STANN CREEK	CENTRAL FARM
January	81	83	79	79	67	67	59	59	83	N.A.	93
February	85	83	83	84	69	68	64	59	78	69	94
March	87	85	85	86	70	69	65	61	74	76	85
April	87	86	87	83	74	72	66	66	77	78	89
May	87	86	85	87	73	71	73	62	74	86	96
June	88	86	87	86	76	75	72	67	81	93	90
July	87	86	85	87	75	73	78	68	79	93	92
August	90	88	87	85	73	78	71	63	77	92	91
September	88	84	87	93	75	73	72	66	83	92	92
October	87	86	82	86	74	72	70	66	83	77	91
November	85	82	78	86	67	67	65	62	80	72	92
December	83	81	78	87	64	63	63	62	82	73	91

APPENDIX IV

SUMMARY FOR RAINFALL 1962

DISTRICT & STATIONS	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL 1962	TOTAL 1961	AVERAGE 10 Years
COROZAL DISTRICT															
Corozal Town	4.92	0.33	0.16	1.69	8.41	8.10	4.35	2.35	10.15	6.22	.54	.37	47.59	37.74	46.50
Corozal Agstat	4.92	0.33	1.10	2.33	6.89	7.03	3.78	2.35	N.A.	N.A.	N.A.	N.A.	28.73	47.59	48.70
Louisville	5.28	0.28	.65	1.27	5.74	8.80	5.69	1.99	5.73	8.34	2.00	1.19	44.96	63.13	51.77
Pembrokehall	4.24	-	.81	1.22	5.22	7.96	4.30	3.23	6.65	4.45	.82	.99	39.89	N.A.	47.73
Orange WALK DISTRICT															
Gallon Jug	4.81	0.48	.46	4.33	4.77	9.31	5.54	2.61	N.A.	8.31	4.64	.12	40.74	N.A.	59.54
Orange Walk Agstat.	2.29	0.67	0.26	2.29	2.58	6.07	5.62	2.08	7.31	9.59	2.18	.13	41.07	68.97	N.A.
August Pine Ridge	-	0.81	0.00	-	5.45	5.40	N.A.	N.A.	5.41	16.34	2.69	.25	66.60	41.69	51.25
BELIZE DISTRICT															
Belize Town	N.A.	N.A.	1.55	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	4.84	N.A.	N.A.	N.A.	N.A.
Salt Creek Estate	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Gracie Rock	5.82	.85	1.58	6.27	4.98	N.A.	N.A.	N.A.	8.87	N.A.	2.55	.39	31.31	N.A.	N.A.
Maskalls	4.10	.38	1.09	5.91	6.74	11.90	6.45	3.41	18.84	21.68	N.A.	.30	75.80	88.27	66.22
Stanley Field	5.00	1.10	1.18	6.52	3.60	19.53	10.09	4.31	9.33	15.15	4.84	.66	81.31	N.A.	67.96
Hattieville	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
CAYO DISTRICT															
Cayo Town	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Central Farm	4.06	.87	.89	7.02	2.09	6.18	10.18	4.07	4.00	6.42	3.05	.85	48.95	43.71	59.68
Benque Viejo	2.94	.90	1.05	11.00	2.56	N.A.	N.A.	4.84	N.A.	N.A.	N.A.	N.A.	25.29	63.20	N.A.
Roaring River	N.A.	1.51	1.99	7.15	N.A.	N.A.	10.36	N.A.	8.52	10.62	3.72	2.18	46.03	N.A.	76.99
Norland	5.30	1.07	0.84	6.89	2.41	5.78	9.63	4.05	6.17	7.68	3.14	.75	53.73	79.18	62.38
Caves Branch	N.A.	2.18	4.63	10.27	N.A.	N.A.	11.99	N.A.	11.46	11.66	5.96	1.91	60.06	N.A.	N.A.
Tower Dolay	N.A.	.73	1.89	4.79	N.A.	N.A.	13.22	N.A.	9.37	14.55	3.12	1.98	49.63	N.A.	N.A.
Barton Camp	N.A.	.82	4.48	9.76	N.A.	N.A.	11.30	N.A.	13.66	13.46	6.31	1.92	61.71	N.A.	N.A.
Cocoa Gairn	10.40	1.01	3.81	9.35	1.36	10.65	3.44	2.68	6.70	13.19	8.37	N.A.	70.00	N.A.	N.A.
Augustine Pine Ridge	5.31	.28	1.38	-	0.70	4.29	2.99	12.05	8.08	15.93	4.75	.25	66.60	N.A.	64.50
Mail Station	5.25	.46	3.30	9.45	1.44	7.83	6.13	4.38	6.19	10.39	3.28	.79	48.89	N.A.	N.A.
STANN CREEK DISTRICT															
Stann Creek Town	N.A.	N.A.	N.A.	N.A.	0.41	1.29	2.49	2.08	3.16	5.26	.71	N.A.	15.40	N.A.	N.A.
Stann Creek Agstat	4.27		5.67	6.73	10.46	5.03	14.40	6.31	11.26	14.02	4.31	3.06	87.65	98.04	84.87
Cow Creek Farm	N.A.	N.A.	6.91	10.75	6.38	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	24.04	N.A.	N.A.
Alta Vista	N.A.	N.A.	8.94	9.53	7.56	13.30	12.94	8.06	12.75	14.30	3.70	N.A.	91.06	N.A.	N.A.
Middlesex	6.04	2.25	8.80	10.06	5.95	5.95	11.27	11.68	14.23	14.22	3.03	1.92	100.40	N.A.	105.08
Melinda	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1.80	N.A.	N.A.	N.A.
Pomona	9.62	1.75	7.17	9.79	10.42	8.90	10.75	8.25	11.49	13.18	3.41	1.90	96.63	N.A.	95.47
Mango Creek	3.04	1.97	2.90	6.19	6.40	8.38	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	28.88	N.A.	N.A.
Sittee River	2.59	3.51	4.88	4.19	N.A.	6.52	11.70	6.41	9.20	13.02	2.54	1.48	46.04	N.A.	N.A.
TOLEDO DISTRICT															
Punta Gorda Town	11.64	1.16	5.94	12.22	18.06	16.61	24.47	27.89	27.11	10.68	1.95	5.87	163.04	206.30	155.59
Punta Gorda Agstat	4.93	1.69	4.67	5.39	9.43	21.14	24.90	24.04	24.65	12.23	2.40	6.10	141.57	159.83	147.78
San Antonio	2.73	N.A.	2.38	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	5.11	N.A.	N.A.
Barranco	8.37	2.16	.83	16.16	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	27.52	N.A.	N.A.
Crique Sarco	7.87	3.15	4.45	6.45	13.26	32.37	37.93	20.60	20.12	13.78	4.00	6.51	164.04	N.A.	N.A.
Machaca Camp	3.95	2.97	N.A.	7.12	6.93		24.72	17.24	13.18	12.06	5.98	2.31	96.46	N.A.	N.A.
Monkey River	7.14	2.04	5.84	4.22	3.23	13.89	10.23	11.94	16.22	18.89	11.01	1.08	105.73	93.28	N.A.
Columbia	3.31	2.05	N.A.	6.40	N.A.	19.86	23.24	18.02	12.90	10.69	N.A.	N.A.	96.47	N.A.	N.A.

APPENDIX V.

AGRICULTURAL EXPORTS 1962 - CUSTOMS DEPARTMENT FIGURES

ITEM		NO.	QUANTITY	VALUE $
Bananas		x 100 lb.	4,243	14,921
Citrus - Grapefruit fresh		x 100 lb.	88	123
Grapefruit	- Juice	x 100 lb.	4,114	43,481
	- Segments Canned	x 100 lb.	28,336	569,686
	- Concentrate	x 100 lb.	155	4,440
Oranges	- Fresh	x 100 lb.	1,819	5,150
	- Concentrate	x 100 lb.	1,700	45,127
	- Juice	x 100 lb.	63,692	741,838
	- Oil	lb.	43,000	18,276
Coconuts	- Nuts	x 100 nuts	175	857
	- Copra	lb.	2,000	140
Cohune	- Kernels	lb.	1,072	73
Fruit	- Various	lb.	40,161	2,464
Honey		lb.	144,815	22,252
Sugar	- Unrefined	x 100 lb.	296,042	3,853,469
	- Molasses	gall.	328,330	74,823
Poultry		Bird	30	30
Eggs	- Fresh	Doz.	23,475	13,631
Fish	- Fresh	lb.	140,164	40,492
	- Dried	lb.	34,557	5,548
	- Conch	lb.	56,625	13,621
	- N.E.S.	lb.	280	190
Lobster	- Tails	lb.	267,954	186,721
	- Whole	lb.	21,655	7,474
Lime	- Oil	lb.	50	450
	- Juice	lb.	379	32
Vegetables		x 100 lb.	9	119
Tobacco		lb.	3,474	174
Tortoise Shell		lb.	901	2,690